REPORT
ON

AICTE SPONSORED ONLINE SHORT TERM TRAINING PROGRAMME SERIES ON
BIG DATA ANALYTICS USING SOFT COMPUTING TOOLS
(For Data Engineering)

STTP – PHASE II: 08 November 2021 to 13 November 2021 (6 days)

Sponsored by
All Indian Council for Technical Education

Organized by
Department of Computer Science and Engineering,
Rajiv Gandhi University

In association with
Department of Electronics and Communication Engineering
Department of Mathematics
Rajiv Gandhi University

Content

Organizing Committee

Chief Patron	**Prof. Saket Kushwaha** Vice Chancellor, Rajiv Gandhi University

Patrons	**Prof. Amitava Mitra** Pro Vice Chancellor, Rajiv Gandhi University **Dr. N. Tadar Rikam** Registrar, Rajiv Gandhi University **Prof. Shahin Ahmed** Dean Faculty of Engineering & Technology, Rajiv Gandhi University

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Coordinator	**Dr. Firos A** Dept. of Computer Science & Engineering**,** Rajiv Gandhi University

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Acknowledgement

I have immense pleasure in expressing my heartfelt gratitude to a number of individuals and institutions for their incessant assistance and encouragement during this Short-Term Training Programme. At the very outset I owe a deep sense of gratitude to Chief Patron of this STTP, **Prof. Saket Kushwaha**, Hon'ble Vice-Chancellor, RGU. I remain indebted to him for the discussions I had with him, his resourceful advice, useful suggestions and unflagging enthusiasm at every turn of this work. I am thankful to Patron of this STTP, **Dr. N. Tadar Rikam** , Registrar ,RGU giving approval for this STTP. I express my gratitude to the Patron of this STTP, **Prof. Amitava Mitra**, in completing the procedures with Short Term Training Programmeme. I am grateful **to Prof. Utpal Bhattacharjee**, Professor and Secretary of this STTP, Department of Dept. Of Computer Science and Engineering, RGU, for his encouragement and help. Thanks are also due to other members of the teaching faculty, and the members of the staff in the office of the Dept. Of Computer Science and Engineering, RGU.

Thanking you.

Dr. FIROS A
Coordinator, STTP
Department of Computer Science and Engineering,
Rajiv Gandhi University (A Central University),
Rono Hills, Doimukh – 791112
Arunachal Pradesh, India

Executive Summary

6 (six) days online AICTE sponsored online short term training program series on big data analytics using soft computing tools (STTP – PHASE II: 08 November 2021 to 13 November 2021) was organized at Rajiv Gandhi University, Arunachal Pradesh with an objective to provide the faculty and research students with an understanding of big data analytics and related soft computing tools. Department of Computer Science and Engineering, Rajiv Gandhi University in association with Department of Electronics & Communication Engineering, Rajiv Gandhi University and Department of Mathematics, Rajiv Gandhi University organized the STTP from 08 November 2021 to 13 November 2021. Eminent resource persons from the field of data science and academics handled 16 technical sessions which were dealt with in the six days of the STTP.

There are many people who contributed a lot for organizing the program successfully. I express my sincere gratitude to each and every one who made this program a success. First of all, I would like to thank Hon'ble Vice Chancellor of Rajiv Gandhi University for allowing us to organize this significant program. I express my heartfelt gratefulness to the Department of Electronics & Communication Engineering, Rajiv Gandhi University and Department of Mathematics, Rajiv Gandhi University for their constant support. I take this privilege to express my cordial appreciation to all the Resource Persons for giving their valuable time and sharing their wisdom through their course material during the STTP. I thank all the participants for actively participating in the program. Last but not least I express thanks to my colleagues and students for their continuous and positive support. It was a well organized training with a lot of inputs provided and the sessions were very informative. There were many topics covered during the program and I hope the shared course materials could spark some interest and ignite a passion to learn more about it. The details of the technical sessions are provided in detail in this report.

Thanking you.

Dr. FIROS A
Coordinator, STTP
Department of Computer Science and Engineering,
Rajiv Gandhi University (A Central University),
Rono Hills, Doimukh – 791112
Arunachal Pradesh, India

1. Introduction

1.1. About Host Institution

1.1.1. Rajiv Gandhi University

Rajiv Gandhi University (formerly Arunachal University) is the premier institution for higher education in the state of Arunachal Pradesh and has completed twenty five years of its existence. RGU is ranked among top 100 Universities in India (as per NIRF ranking). Late Smt. Indira Gandhi, the then Prime Minister of India, laid the foundation stone of the university on 4th February 1984 at Rono Hills, where the present campus is located. Ever since its inception, the university has been trying to achieve excellence and fulfill the objectives as envisaged in the University Act. The University got academic recognition under section 2(f) from the University Grants Commission on 28th March, 1985 and started functioning from 1st April, 1985. It got financial recognition under section 12-B of the UGC on 25th March, 1994. Since then Rajiv Gandhi University then Arunachal University has carved a niche for itself in the educational scenario of the country following its selection as a University with potential for excellence by a high level expert committee of University Grants Commission from among universities in India. The University was converted into a Central University with effect from 9th April 2007 as per notification of Ministry of Human Resource Development, Government of India.

The Faculty members have been actively engaged in research activities with financial support from UGC and other funding agencies. Since inception, a number of proposals on research projects have been sanctioned by various funding agencies to the University. Departments have organized a number of Seminars, Workshops and Conferences. Many faculty members participated in national and international conferences and seminars held within the country and abroad. Eminent scholars and distinguished personalities have visited the University and delivered lectures on various disciplines.

The academic year 2000-2001 was a year of consolidation for the University. The switch over from annual to semester system took off smoothly and the performance of the students registered a marked improvement. Various syllabi designed by Boards of Post-Graduate Studies (BPGS) have been implemented. VSAT facility installed by the ERNET India, New Delhi under UGC-Infonet program, provides internet access.

In spite of infrastructural constraints, the University has been maintaining its academic excellence. The University has strictly adhered to the academic calendar, conducted the examinations and declared the results in time. The students from the University have found placements not only in State and Central Government Services, but also in various institutions, industries and organizations. Many students have come out successful in the National Eligibility Test (NET).Since inception; the University has made significant progress

in teaching, research, innovations in curriculum development and developing infrastructure.

1.1.2. Department of Computer Science & Engineering

The Department of Computer Science was established in 2005, with a diploma course of one-year duration, and a three-year undergraduate course, Bachelor of Computer Applications (BCA). The first and second batch of the BCA program has completed and the third batch has started from the session 2008-2009, starting from July, 2008. In the year 2006 the Master of Technology in Computer Science and Engineering was started in the department. The department has started the Master of Computer Application course from the session 2013-14.

1.2. About The Sponsoring Agency

The program is fully funded by All India Council for Technical Education. According to the All India Council for Technical Education, 1987, the AICTE is vested with statutory authority for planning, formulation and maintenance of norms and standards, quality assurance through school accreditation, funding in priority areas, monitoring and evaluation, maintaining parity of certification and awards and ensuring coordinated and integrated development and management of technical education in the country. In the words of the Act itself:

To provide for establishment of an All-India council for Technical Education with a view to the proper planning and coordinated development of the technical education system throughout the country, the promotion of qualitative improvement of such education in relation to planned quantitative growth and the regulation and proper maintenance of norms and standards in the technical education system and for matters connected therewith.

References:

1. Our application in online mode to AICTE to get financial assistance to conduct STTP dated 19.11.2020 (under AQIS 2020-21 SHORT TERM TRAINING PROGRAMME (STTP) in NER and UTs of J&K and Ladakh scheme)

2. Financial sanction letter from AICTE Ref. No. 34-68/21/FDC/STTP-NER/P-1/2020-21, Dated 10.03.2021
3. Letter from AICTE Ref. No. Nil, Subject (permission to conduct STTP through online mode) dated 01.04.2021
4. sanctioned amount from AICTE is deposited to the university account with following details: (Account Number: 83420100000307, Bank Branch IFSC: BARB0VJARUN Amount deposited by AICTE: Rs. 300000 (Rupees Three lakhs) (Deposed on 24.03.2021) (rev a/c as other misc receipts)

1.3. Background

Through this industry associated STTP, we tried to build an environment to learn about the present scenario of big data analytics in academics and industries and participants to achieve

the practical knowledge from Big data experts. This STTP helped people unfamiliar with data science to put next gear in learning and research.

Data Analytics is a conglomeration of many disciplines like computer science, statistics and business intelligence for discovering useful hidden patterns which is to be used for prediction of the future events in terms of providing useful insights. Big Data is a large volume of both structured- and unstructured data generated from different sensors and applications such as social media, text documents, videos, audios, and images. The volume, varied formats of data and the rapid velocity of its generation poses an additional challenge to seek suitable Soft Computing tools and techniques to store, process, verify and analyze it. The objective of this STTP programme is to hold a platform of discussion on various Soft Computing tools and techniques in the field of Big Data and data analytics to the participants.

TOPICS TO BE COVERED

- Big Data and High Dimensional Data Analysis Static and Dynamic Data Analysis
- Predictive analytics using R/Spark
- Big Data Tools for Real Time Analytics
- Introduction to the Map-Reduce framework and Hadoop
- Distributed Machine Learning and Big
- Data Analysis using Deep Learning Tools

1.4. Significance And Objectives:

1. The objectives are to provide the faculty with an understanding of big data analytics.
2. To provide the participants with an understanding of different tools related to big data analytics.
3. Data Analytics is a conglomeration of many disciplines like computer science, statistics and business intelligence for discovering useful hidden patterns which is to be used for prediction of the future events in terms of providing useful insights.
4. To get hands-on experience of Python
5. Big data is a large volume of both structured and unstructured data generated from different sensors and applications such as social media, text documents, videos, audios, and images. The volume, varied formats of data and the rapid velocity of its generation poses an additional challenge to seek suitable soft computing tools and techniques to store, process, verify and analyze it.
6. To bring the participants to the level of depth necessary in the subject matter to achieve the stated objectives.
7. To encourage participation in the National Agenda of knowledge building through online distance education mode in the lockdown period due to novel corona virus.

1.5. Expected Outcomes

The purpose of this program is to enable the participants to apply the skills learned through various video tutorials and presentations of the STTP. Experts in this STTP will enable the participants to learn how to utilize the Data science infrastructure in a better and productive way.

This STTP seeks to bridge the divide between what has traditionally been viewed as the sole objective of Information Technology and what can be the triple bottom line for forward-thinking Information Technology: its real application, ease of use, advancements and profit.

1.6. Themes And Sub-Themes

It was a 6 days STTP which aimed at providing valuable information to all the participants of the program. The main motive of this program was to enhance the best techniques of teaching methods in the present day and to update the knowledge of the faculty within special focus on data science.

1.6.1. Sub-Themes

The success of this Short Term Training Programme is due to the peculiar themes of this program :

- **In person**. It was increasingly feasible to create and sustain virtual networks using resources such as videoconferencing and web 2.0 communications, which allowed substantial value in bringing people together to be immersed in a common experience. Personal interactions also allow for informal communication outside the defined schedule that can be valuable to the network-building process.

- **Duration**. Experience from 6 days of STTP From 08 November 2021 to 13 November 2021 suggests that one week long program would be optimal, given the amount of new material that participants would be expected to absorb and the value of cumulative learning-by-doing.

- **Team-based**. A key element for ensuring success and enhancing sustainability in this STTP is the participation of teams from institutions, including a range of junior to senior members on each team. The adopted STTP model has shown added success and commitment by participants if their home institute provides at least modest resources to help implement what participants learn.

- **Hands-on**. As the design of the planning committee meeting of Dept of CSE, RGU suggested, the STTP built around extensive, direct participation. Participants have the opportunity to be both “students” and “teachers,” to practice the methods they are learning, and to develop “teachable tidbits” and other materials (e.g., appropriate

assessments) to help them implement their new courses or modules at their home institutions.

- **Implementation and Assessment**. An important feature of this program's hands-on approach is the commitment to assist participants in implementing what they have learned. In addition to implementing new ideas or courses, they acquired experience and resources to plan and carry out effective assessments of whether the learning goals of their new activities are being met.

1.6.2. Relevance

The purpose of this program is to enable the participants to apply the skills learned through Various tutorials and presentations of the course. Participation in this course will enable the participants to learn how to utilize the Data science infrastructure in a better and productive way. This course seeks to bridge the divide between what has traditionally been viewed as the sole objective of Information Technology and what CAN be the triple bottom line for forward-thinking Information Technology: its real application, ease of use, advancements and profit.

1.6.3. Benefits to Faculty

The purpose of this program is to enable the participants to apply the skills learned through Various tutorials and presentations of the course. Participation in this course will enable the participants to learn how to utilize the Data science infrastructure in a better and productive way. This course seeks to bridge the divide between what has traditionally been viewed as the sole objective of Information Technology and what CAN be the triple bottom line for forward-thinking Information Technology: its real application, ease of use, advancements and profit.

1.7. Budget

Attached Separately

1.8. Modus Operandi

To encourage participation in the National Agenda of knowledge building through online distance education mode in the lockdown period due to novel corona virus (COVID-19). During the last decade, the momentum coming from both academia and industry has lifted the data science to become the single most important tool for computational statistics, visualization and forecasting. Worldwide, millions of statisticians and data scientists use big data tools to solve their most challenging problems in fields ranging from computational biology to quantitative marketing. Participants will learn the most popular language for data science and other essential tool for Finance and analytics-driven companies such as Google, Facebook ,LinkedIn etc.

2. Program Details:

2.1. Highlight of Program

1. No registration fee
2. Certificate of participation
3. Learn from home
4. For faculties/researchers
5. Tuned to suit the researchers of all domain
6. Materials of every session are communicated through mails to all registered participants.

2.2. The Course Details

1. **Start Date for Registration:** 22-4-2020 **Link for Registration : https://rb.gy/aqkzih**
2. **Last Date for registration:** 06-11-2021
3. **STTP Duration:** 08 November 2021 to 13 November 2021 (6 days)
4. **STTP Exam Date (Online)**: 13 -11-2021
5. **Duration of Exam:** 1 hour
6. **Total Number of Resource Persons:** 16
7. **Total Number of Technical Session:** 17
8. **Total Number of Registrations:** 144 (Details: Annexure 1)
9. **Total number of participants:** 88 (Average attendance)
10. **Total number of participants completed course:** 44
11. **The faculty members and research scholars from the following states (20 states) and Union Territory registered for STTP.**
    i. Andhra Pradesh
    ii. Arunachal Pradesh
    iii. Assam
    iv. Bihar
    v. Chhattisgarh
    vi. Gujarat
    vii. Haryana
    viii. Himachal Pradesh
    ix. Jammu and Kashmir
    x. Karnataka
    xi. Kerala
    xii. Madhya Pradesh
    xiii. Maharashtra
    xiv. Manipur
    xv. Punjab
    xvi. Rajasthan
    xvii. Tamil Nadu
    xviii. Telagana
    xix. Uttar Pradesh
    xx. West Bengal

3. Session Wise Deliberations

STTP- Phase II: AICTE sponsored online STTP on "BIG DATA ANALYTICS USING SOFT COMPUTING TOOLS (FOR DATA ENGINEERING)"

08 Nov 2021 to 13 Nov 2021 (6 days)

Organized by

Department of Computer Science and Engineering
Rajiv Gandhi University (A Central University)
Doimukh, Arunachal Pradesh-791112

Organizing partners:

Department of ECE, RGU and
Department of Mathematics, RGU

PROGRAM SCHEDULE

Inaugural Session

Date : 08 Nov 2021

10:00 AM -10:05 AM: Welcome Address by Organising Chairman

10:05 AM -10:10 AM: Address by Coordinator

10:10 AM -10:15 AM: Theme of Programme by Convenor

10:15 AM -10:20 AM: Vote of Thanks by Convenor

(Mode : Online , Hosting Venue : Department of CSE, RGU , Link for Joining : **https://meet.google.com/hid-qkcq-nxt**)

Link for STTP telegram Group : **https://t.me/joinchat/pLEzg7kw54c3Nzll**

Link for the Program: https://meet.google.com/xyv-vsqn-noa (Recurring Link for 6 days)

Technical Session

Days	10:00 AM -11:30 AM	11:30 AM -1:00 PM	1:00 PM - 2:00 PM	2:00 PM -3:30 PM
Day 1: 08-11-2021 (Monday)	**Topic :** Application Of Big Data Analytics , From Smart Grid To Financial Technology **Dr. Santosh Biswas** Associate Professor, Department of Computer Science & Engineering Indian Institute of Technology Guwahati	**Topic :** { Introduction to big data : Perspectives and algorithms } **Mr. Aswini Kumar Patra**, Assistant Professor , NERIST, Arunachal Pradesh	**Lunch Break**	**Topic :** { Real world signals , Big data and deep learning structures} **Prof. Kandarpa Kumar Sarma** Professor, Department of Electronics and Communication Engineering Gauhati University
Day 2: 09-11-2021 (Tuesday)	**Topic:** Introduction to Hash Tables **Dr. Ashwin Ganesan**, AssociateProfessor, International School of Engineering (INSOFE) Mumbai	**Topic :** HARD & Soft Support Vactor Machines with Kernel Methods and Their Applications **Dr. Vibhor Kant,** Assistant Professor, RGSC, BHU		**Topic :** { Green Computing Software as-a-Service} **Dr. Sumit Kalra ,**Assistant Professor ,Dept. of Computer Science and Engineering IIT Jodhpur RAJ 342037
Day 3: 10-11-				**Topic :** Supervised learning : Decision

2021(Wednesday)	**Topic :** { Data Mining algorithms } Dr. Rakhi Garg. Associate Professor,. Computer Science, Mahila MahavIdyalaya, Banaras Hindu University, Varanasi	**Topic :** Supervised learning : Decision trees and Adaboost **Dr.P.Thiyagarajan,**Assistant Professor, Department of Computer Science, Central University of Tamil Nadu		trees and Adaboost **Dr.P.Thiyagarajan,**Assistant Professor, Department of Computer Science, Central University of Tamil Nadu
Days	10:00 AM -11:30 AM	11:30 AM -1:00 PM		2:00 PM -3:30 PM
Day 4: 11-11-2021(Thursday)	**Topic:** Advances in Fuzzy Clustering Algorithms for Medical Image Segmentation **Prof. Jamuna Kanta Sing,**CSE Dept., Jadavpur University Kolkata 700032	Topic : Data Science in Road Traffic Accident Management **Dr. Ann Baby** ,Assistant Professor ,Rajagiri College of Social SciencesKalamassery Cochin		**Topic :** codesmells Detection Using Machine Learning **Dr Manjari Gupta ,** Associate Professor ,Department of Computer Science, DST-CIMS, Institute of Science, Banaras Hindu University
Day 5: 12-11-2021 (Friday)	**Topic :** Fundamental of Machine Learning and Deep Learning Algorithms **Prof P K Mishra**, Professor&,Department of Computer Science, Institute of Science Banaras Hindu University	**Topic :** { Application of Data science towards Earthquake Risk Assessment} **Dr. Ranjit Das,** **Assistant Professor Department of Computing & Systems Engineering** Universidad Catolica del Norte**, Chile**		**Topic :** { Making Machine understand word and sub word boundaries} **Dr. Ashish Anand ,**Associate Prof , IIT Guwahati
Day 6: 13-11-2021	**Topic**: Artificial Intelligence based big data analytics using IoT in	**Topic :** NEP 2020: Major Reforms		**Examination**

(Saturday)	Cloud Environment **Dr. Mansaf Alam**, AssociateProfessor, Department of Computer Science,Jamia Millia Islamia,New Delhi-110025.	**Dr. Nisanth P.M** , Assistant Professor ,Department of Education Rajiv Gandhi University (A central university) Rono-Hills, Doimukh-791112, Arunachal pradesh		


Utpal Bhattacharjee
Cert Phase-2 CSE RGU AICT

Day 1: 08-11-2021 (Monday)

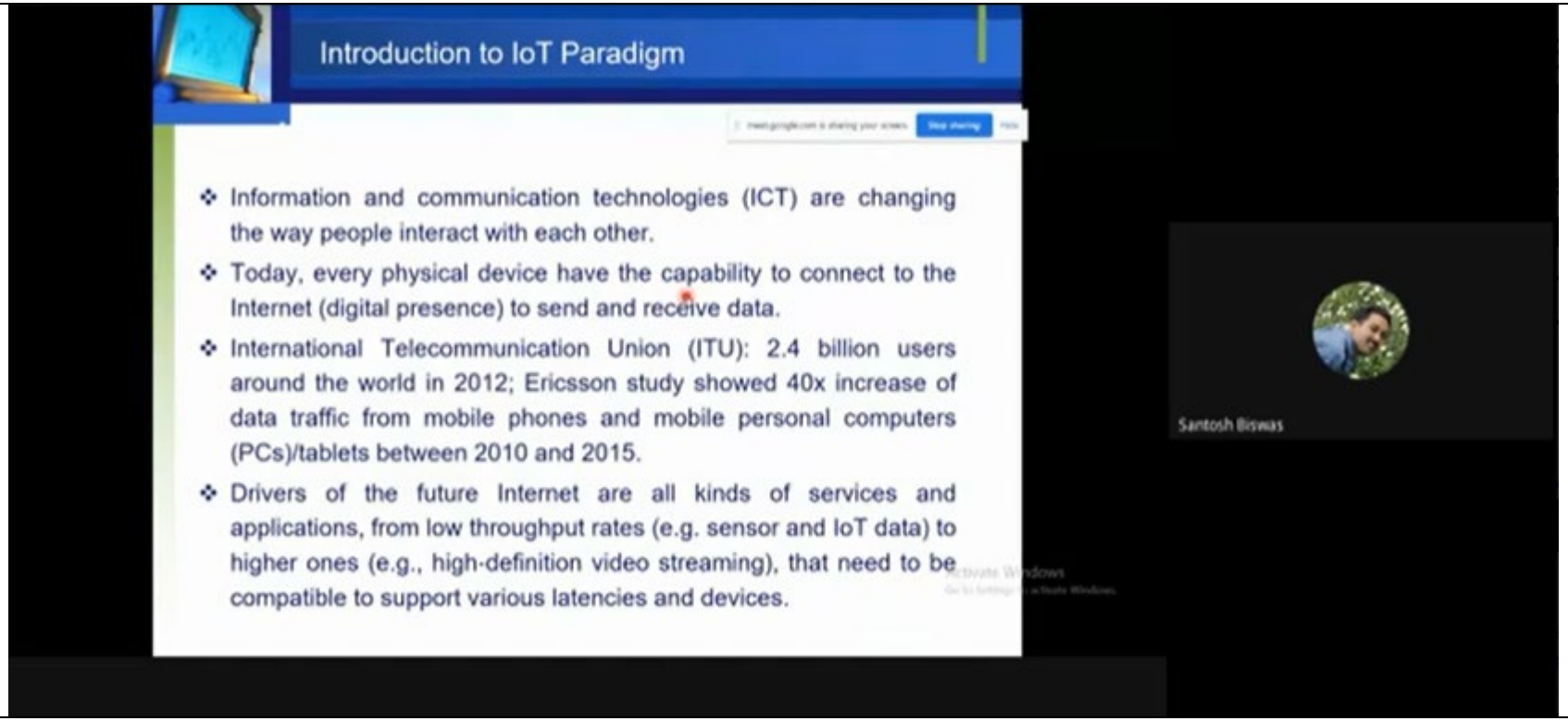
Topic 111 :	**Fundamentals of Data Science and Analytics**

Dr. Santosh Biswas ,Associate Professor, Department of Computer Science & Engineering ,Indian Institute of Technology ,Guwahati

Dr. Santosh Biswas is Associate Professor, Department of Computer Science & Engineering
Indian Institute of Technology ,Guwahati .He has more than 20 years of experience in teaching and research.
His primary research interests are in Information Systems and Text Analytics. He has published about 60 research papers (including more than 40 in top SCIE indexed journals). He has supervised over 5 Doctoral thesis and more than 50 Master's thesis. He has obtained research grants from several national and international funding agencies and have worked on 08 extramural research projects. He is Editor of several Scopus indexed Journal. He is member of academic bodies of different Universities and an expert member in several research bodies.

Major Points Discussed :

- Big data is used in several ways, including: Customer analytics
    - Compliance analytics
    - Fraud analytics
    - Operational analytics
- Data analytics can optimize the buying experience through mobile/weblog and social media data analysis.
- Data analytics helps in collecting data to optimize and spend within and across games. Gaming companies are also able to learn more about what their users like and dislike.
- Most firms are using data analytics for energy management, including smart-grid management, energy optimization, energy distribution, and building automation in utility companies.
- The application here is centered on the controlling and monitoring of network devices and dispatch crews, as well as managing service outages.
- Utilities have the ability to integrate millions of data points in the network performance and gives engineers the opportunity to use the analytics to monitor the network.



Topic 112 :	**Introduction to big data : Perspectives and algorithms**

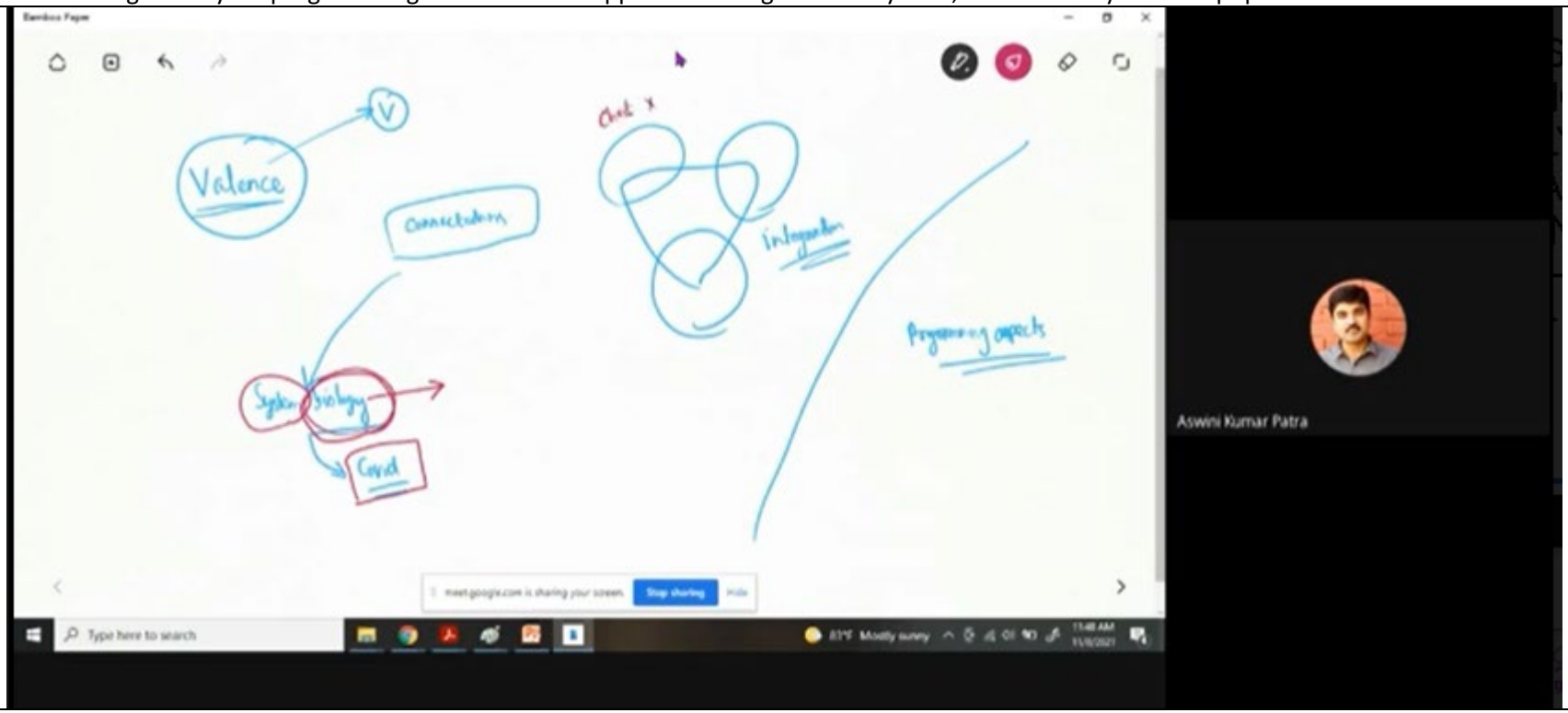
Mr. Aswini Kumar Patra, Assistant Professor, NERIST, Arunachal Pradesh

Mr. Aswini Kumar Patra is presently Assistant Professor in the Department of Computer Science and Engg , Assistant Professor, NERIST, Arunachal Pradesh . His broad areas of research include Machine Learning, Cryptography, Big Data Analytics,Information Security, and IoT. He has published more than 40 research papers in various reputed journals/conferences. He is an active review member of a few SCI indexed journals, and core ranked conferences. **He Delivered 100 + invited talks in colleges and universities on various technical topics**

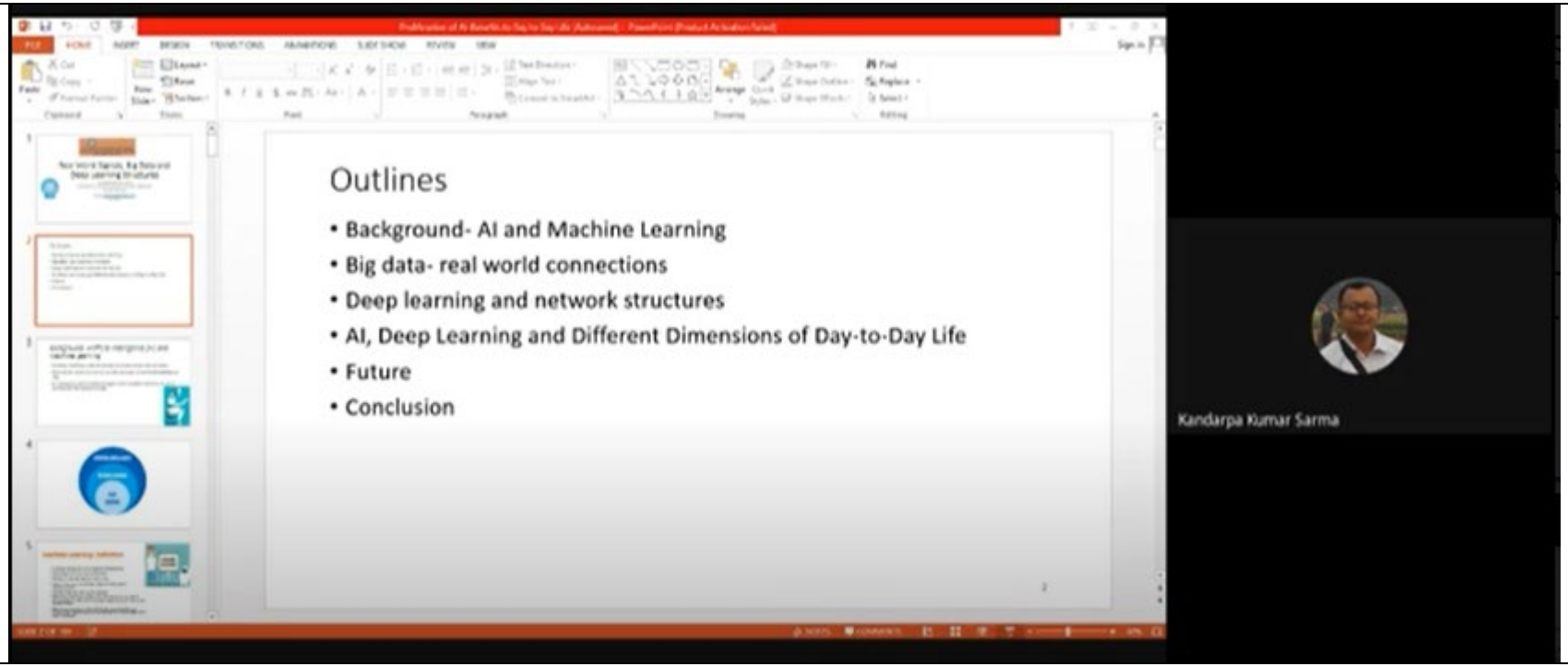
Major Points Discussed:

- Apache Storm, Apache Flink, and Apache Spark provide different ways of achieving real-time or near real-time processing.
- There are trade-offs with each of these technologies, which can affect which approach is best for any individual problem.
- In general, real-time processing is best suited for analyzing smaller chunks of data that are changing or being added to the system rapidly.

-
- The above examples represent computational frameworks. However, there are many other ways of computing over or analyzing data within a big data system.
- These tools frequently plug into the above frameworks and provide additional interfaces for interacting with the underlying layers.
- For instance, Apache Hive provides a data warehouse interface for Hadoop, Apache Pig provides a high level querying interface, while SQL-like interactions with data can be achieved with projects like Apache Drill, Apache Impala, Apache Spark SQL, and Presto. For machine learning, projects like Apache SystemML, Apache Mahout, and Apache Spark's MLlib can be useful.
- For straight analytics programming that has wide support in the big data ecosystem, both R and Python are popular choices.



Topic 113 :	Real world signals , Big data and deep learning structures
Prof. Kandarpa Kumar Sarma ,Professor, Department of Electronics and Communication Engineering	

Gauhati University
Dr. Kandarpa Kumar Sarma, currently Professor and Head, Department of Electronics and Communication Engineering, GUIST, Gauhati University, India specializes in mobile communication, speech processing, deep learning and antenna design. He completed MTech in Signal Processing in 2005 from IIT Guwahati, India from where he later on earned PhD in the area of mobile communication (2012). He is a Senior Member of IEEE (USA) and a fellow of Institution of Electronics and Telecommunication Engineers (IETE) (India).
Major Points Discussed: • Apache Storm, Apache Flink, and Apache Spark provide different ways of achieving real-time or near real-time processing.


Day 2: 09-11-2021 (Tuesday)

Topic 221 :	Introduction to Hash Tables

Prof. Ashwin Ganesan, Associate Professor, International School of Engineering (INSOFE)Mumbai

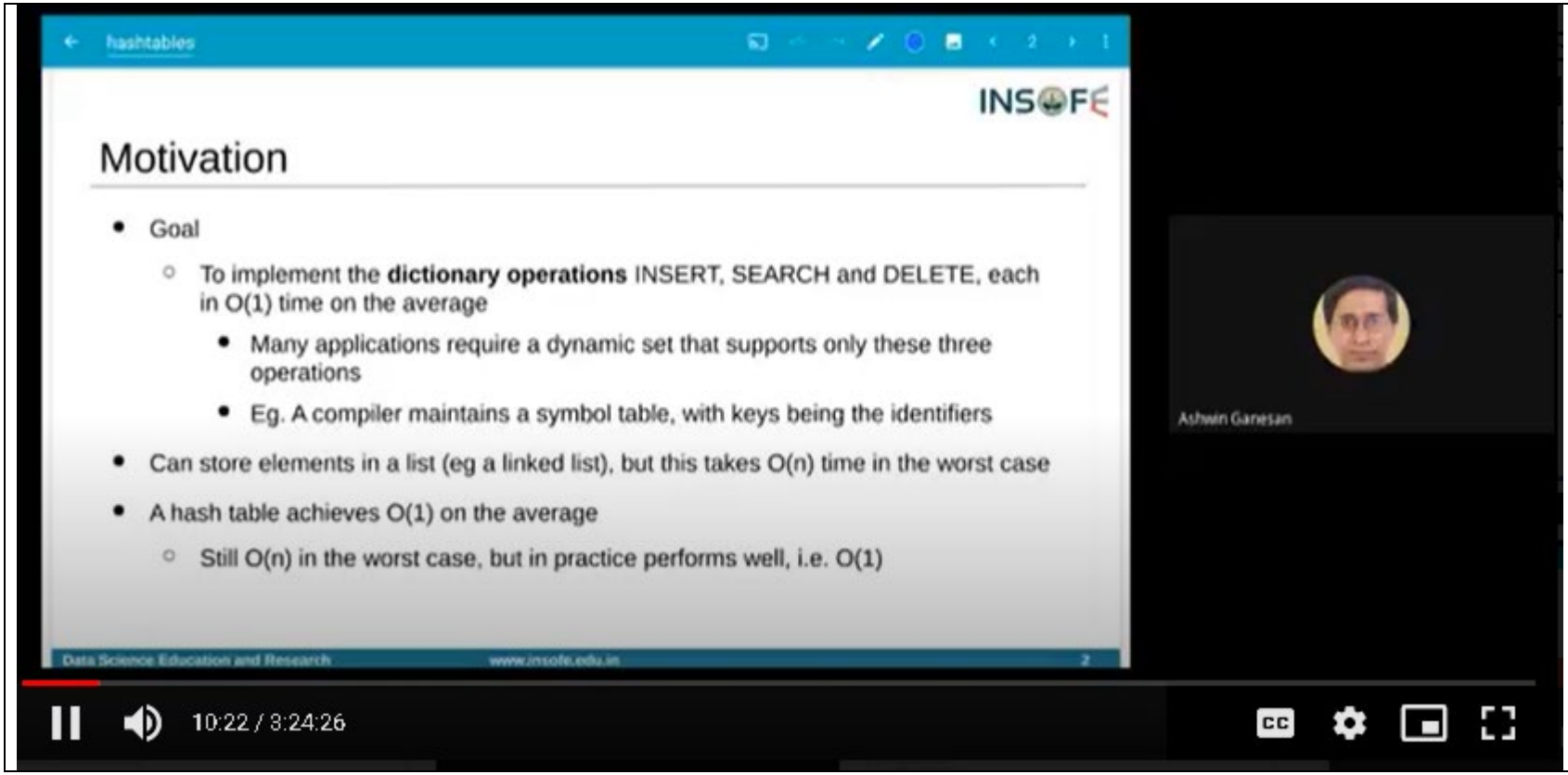
Prof. Ashwin Ganesan received the Bachelor's degree in Electrical Engineering from Marquette University, Milwaukee, Wisconsin, in 1998. He received the Master's degree in Electrical Engineering from the University of Wisconsin at Madison in 2000.

He is an Associate Professor at the International School of Engineering (INSOFE), Mumbai, Maharashtra, India. His research areas include distributed algorithms, graphs and algorithms in communication networks, discrete mathematics and graph theory, interconnection networks, applied combinatorics, and graph algorithms in data science.

His research results have been published in journals such as IEEE Transactions on Communications, Linear Algebra and its Applications, IEEE Transactions on Information Theory, Applied Mathematics Letters, Wireless Networks, Discrete Mathematics, Journal of Algebraic Combinatorics, Discrete Applied Mathematics, and IEEE/ACM Transactions on Networking.

Major Points Discussed:

- A Hash Table is a data structure that stores data in an associative manner. It is made up of two parts: an array, where the data is stored, and a Hash Function which is a mapping function. Basically, a Hash Function is a function that takes things from one space and maps them to a space for indexing.
- A Hash Table is used to implement structures such as dictionary, map, or associative array and it is a data structure in which insertion and search operations are very fast.
- The idea behind a Hash Table is that for each element we want to store, we calculate a unique address and we put the value at this index in the array. When we need to find a value, we once again calculate its index and then return the value. In other words, a Hash Table allows us to store and retrieve objects by key.



Topic 222 :	HARD & Soft Support Vector Machines with Kernel Methods and Their Applications

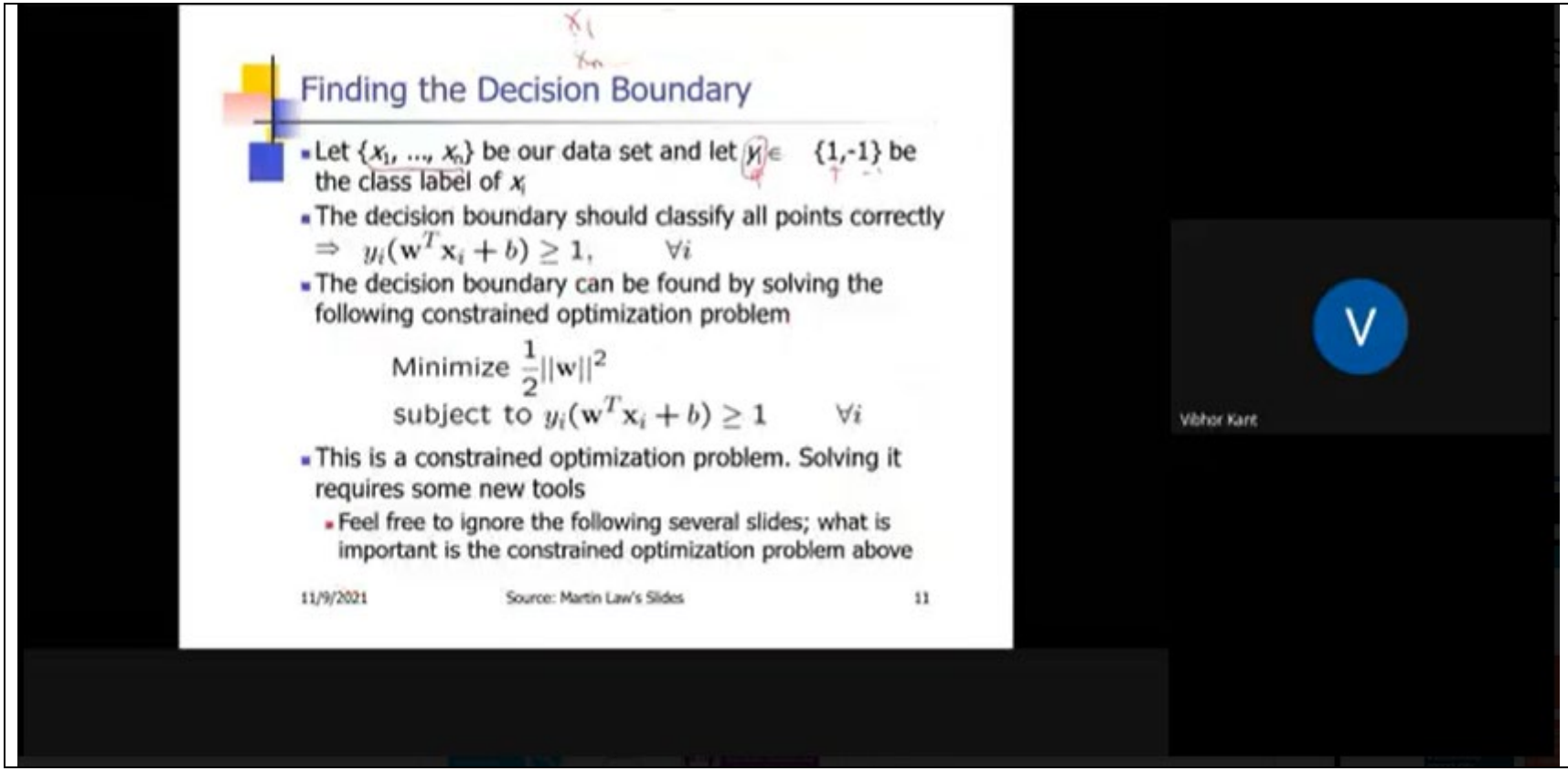
Dr. Vibhor Kant, Assistant Professor, RGSC, BHU

Dr. Vibhor Kant is currently associated with the department of Computer Science at RGSC unit of BHU Varanasi. Prior to joining BHU, he had served as an assistant professor in the Dept. of CSE at the LNMIIT Jaipur. He had also worked as an assistant professor in the dept of CS at Kalindi College, Delhi University. He had also served as a lecturer in the Dept. of Mathematics at KA PG college of Dr B.R.A.U. Agra. He was associated with various administrative responsibilities such as PG admissions, convener, Mess warden and IBM coordinator at the LNMIIT Jaipur

Dr Vibhor Kant has earned his M. Tech, and Ph.D. degree from JNU New Delhi after completing his M.Sc. in Mathematics.

He has guided various undergraduate and postgraduate students for their projects and dissertations. He has also supervised two Ph.D. students.

He has published various articles in SCI/SCIE/Scopus indexed reputed journals and conference proceedings.
Major Points Discussed: • 1. What is SVM? • 2.The ideology behind SVM. • 3.Intuition development. • 4.Terminologies used in SVM. • 5. Hyperplane(Decision surface). • 6.Hard margin SVM. • 7.Soft margin SVM. • 8.Loss Function Interpretation of SVM. • 9.Dual form of SVM. • 10. What is Kernel trick? • 11.Types of kernels. • 12. Pros and cons of SVM. • 13. Preparing data for SVM. • 14. Model application



Topic 223 :	**Green Computing Software as-a-Service**

Dr. Sumit Kalra ,Assistant Professor ,Dept. of Computer Science and Engineering ,IIT Jodhpur RAJ 342037

Dr. Sumit Kalra earned his Ph.D. from IIT Kanpur in 2018 and joined IIT Jodhpur as Assistant Professor in the Department of Computer Science and Engineering. He is mainly interested in exploring the software architectural issues related to the quality of complex software systems across various domains such as data intensive processing, edge-fog computing, AI, and IoT-based systems. He has a couple of patents and high-quality publications in his name.

Major Points Discussed:

- He introduced the concept of green-as-a-service that provides a cost-effective and specialized on-demand monitoring, analysis, and continuous

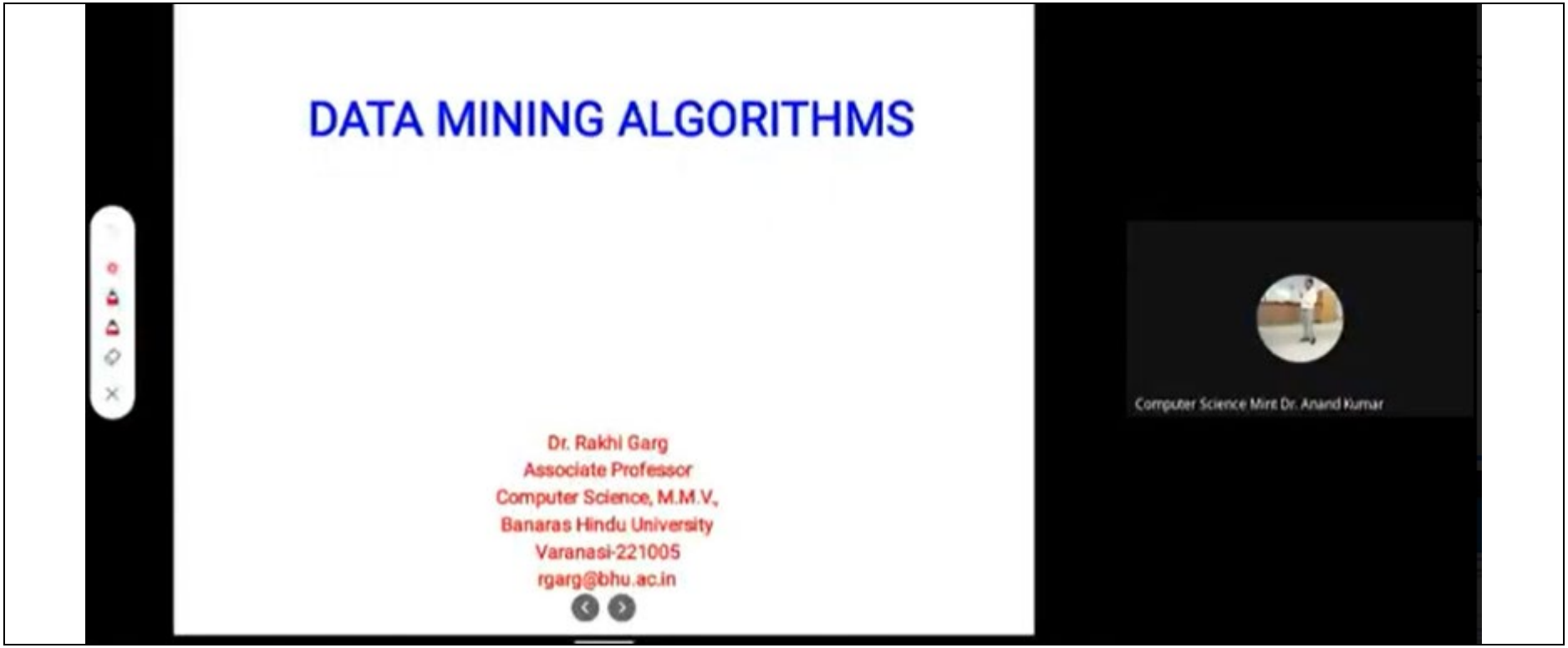
feeds for energy use and savings which can be exploited by both providers and consumers to meet energy targets.

- He described a decentralized architecture model for implementing GaaS and discuss its constituent components.
- The architecture leverages on SOA and publish-subscribe model to provide an effective solution for wider adoption of the vision and to render an inherently scalable solution.
- The service has the promise to provide transparency in the way energy and long-term sustainability are linked to the business objectives along with its cost and revenues.

Day 3: 10-11-2021(Wednesday)

Topic 231 :	Data Mining Algorithms

Dr. Rakhi Garg. Associate Professor,. Computer Science, Mahila MahavIdyalaya, Banaras Hindu University, Varanasi
Dr Garg is having more than 21 years of teaching experience. Before joining Banaras Hindu University in 2007 worked with SMS, Varanasi and RSMT, U.P. Autonomous College, Varanasi. **Education**: BSc (Hons.) Computer Science, MSc Computer Science, PhD in Computer Science from Banaras Hindu University. Also UGC NET qualified. **Papers published in International/national Journals and Proceedings**: Around 50 publications out of which 14 are SCOPUS indexed. **PhD guided**: Four have awarded and three are pursuing. Reviewer of various International Journals Presented papers in various national/international Seminars/conferences/workshops. Jury member of Smart India Hackathon 2018 & 48th Jawaharlal Nehru National Science, Maths and Environment Exhibition (JNNSMEE)", organized by Kendriya Vidyalaya, 2021 Delivered talks/Lectures in various Orientation/Refresher courses/Workshops Have organized various national Seminar/Workshops/Conferences. Nodal Person of MMV since 2009 and In charge, Computer Science, MMV from 2009 to March 2021. Worked as a Chairman of Badminton and Table Tennis, University Sports Board, Banaras Hindu University
Major Points Discussed: • C4. 5 Algorithm. • K-mean Algorithm. • Support Vector Machines. • Apriori Algorithm. • Expectation-Maximization Algorithm. ... • PageRank Algorithm. • Adaboost Algorithm. • kNN Algorithm.

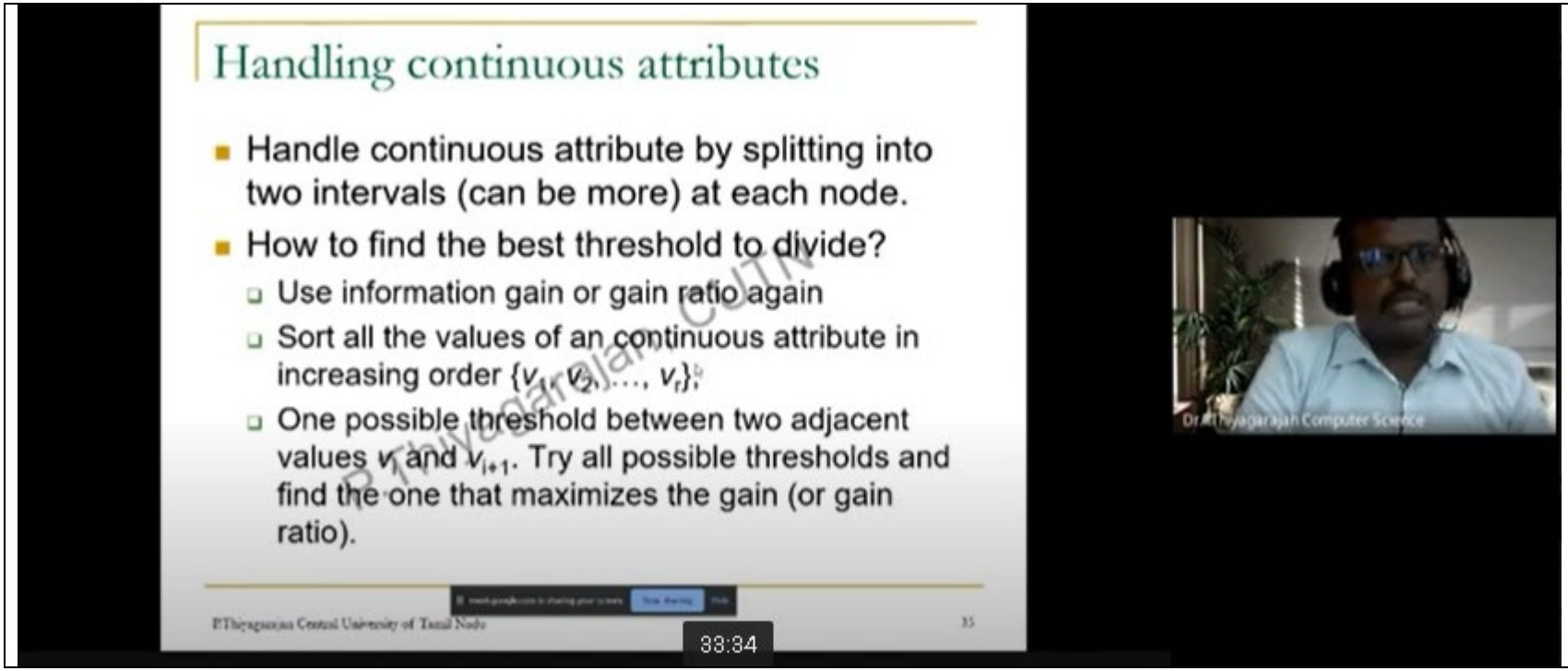


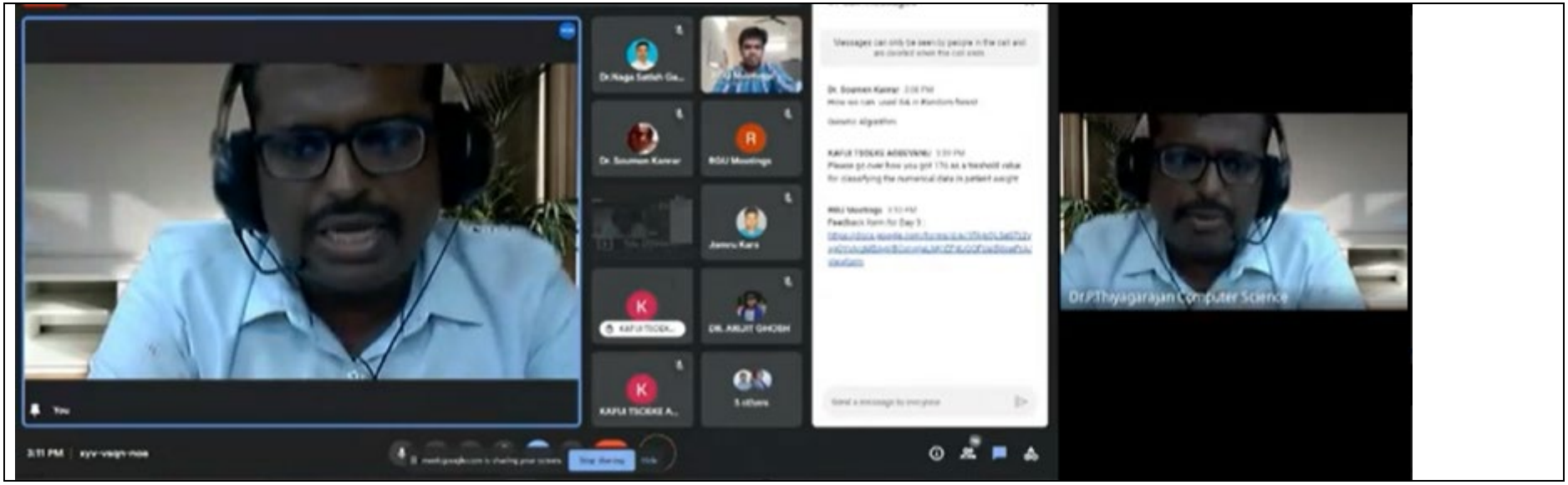
Topic 232 & Topic 233	Supervised learning : Decision trees and Adaboost

Dr.P.Thiyagarajan,Assistant Professor, Department of Computer Science, Central University of Tamil Nadu

Dr.P.THIYAGARAJAN is presently Assistant Professor in the Department of Computer Science Central University of Tamil Nadu. His broad areas of research include Machine Learning, Cryptography, Big Data Analytics,Information Security, and IoT. He has published more than 40 research papers – which includes 03 book – in various reputed journals/conferences. He is an active review member of a few SCI indexed journals, and core ranked conferences. He is the recipient of **Young Scientist Award'** by TamilNadu State Council for Science and Technology , 'Post-Doctoral Fellow' awarded by Department of Atomic Energy and

'Best Technical Award' by Aricent Technologies . He has 3 Projects Completed worth of 10.5 lakhs funded by ICSSR and MHRD. He Delivered 100 + invited talks in colleges and universities on various technical topics
Major Points Discussed: • What the boosting ensemble method is and generally how it works. • How to learn to boost decision trees using the AdaBoost algorithm. • How to make predictions using the learned AdaBoost model. • How to best prepare your data for use with the AdaBoost algorithm • AdaBoost is best used to boost the performance of decision trees on binary classification problems. • AdaBoost was originally called AdaBoost.M1 by the authors of the technique Freund and Schapire. More recently it may be referred to as discrete AdaBoost because it is used for classification rather than regression. • AdaBoost can be used to boost the performance of any machine learning algorithm. It is best used with weak learners. These are models that achieve accuracy just above random chance on a classification problem. • The most suited and therefore most common algorithm used with AdaBoost are decision trees with one level. Because these trees are so short and only contain one decision for classification, they are often called decision stumps.


Handling continuous attributes
Handle continuous attribute by splitting into two intervals (can be more) at each node.
How to find the best threshold to divide?
Use information gain or gain ratio again
Sort all the values of an continuous attribute in increasing order $\{v_1, v_2, \ldots, v_r\}$.
One possible threshold between two adjacent values v_i and v_{i+1}. Try all possible thresholds and find the one that maximizes the gain (or gain ratio).
P.Thiyagarajan Central University of Tamil Nadu
33
38:34
Dr.P.Thiyagarajan Computer Science



Day 4: 11-11-2021(Thursday)

Topic 241 :	Advances in Fuzzy Clustering Algorithms for Medical Image Segmentation

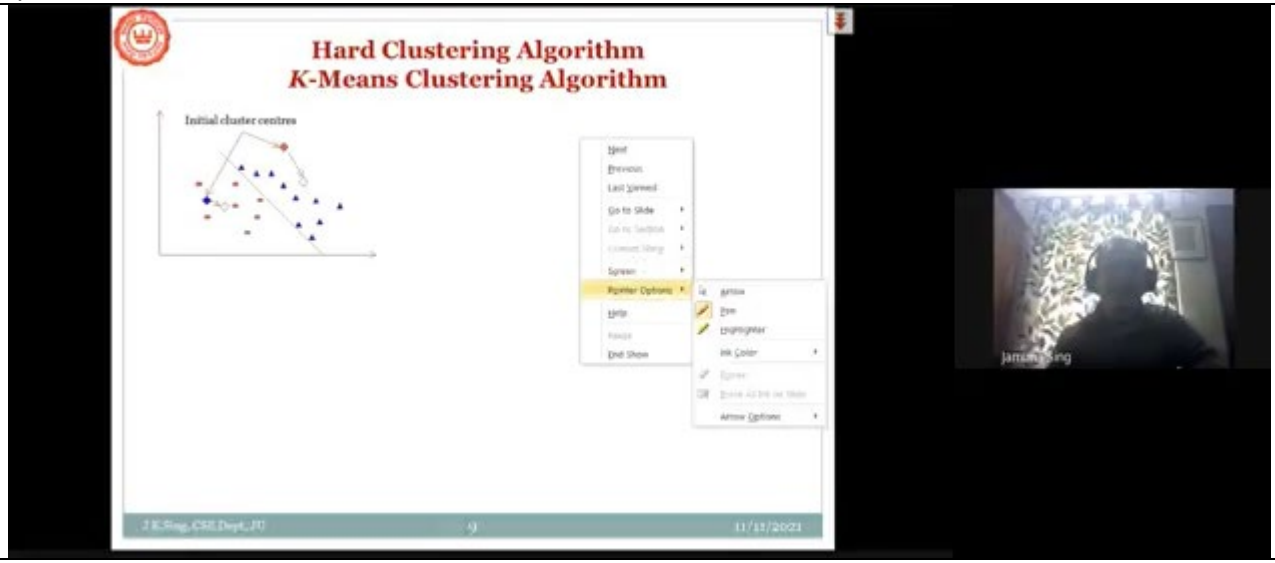
Prof. Jamuna Kanta Sing,CSE Dept., Jadavpur University, Kolkata 700032

Jamuna Kanta Sing has received his B.E. (Computer Science & Engineering) degree fromJadavpur University in 1992, M.Tech. (Computer & Information Technology) degree fromIndian Institute of Technology (IIT) Kharagpur in 1994 and Ph.D. (Engineering) degree fromJadavpur University in 2006. Dr. Sing has joined the Department of Computer Science &Engineering, Jadavpur University in March 1997 and presently serving as a Professor since2010. He is a recipient of the ***BOYSCAST Fellowship*** of the Department of Science &Technology, Govt. of India for doing advanced research at the University of Pennsylvaniaand the University of Iowa, USA in 2006 and the ***UGC Research Award*** in 2014. He is a senior member of the IEEE, USA. He has published more than 45 research papers inSCI/SCOPUS and other reputed refereed International Journals and more than 65 papers ininternational conferences. He has supervised 12 PhD scholars and completed 5 R&D projectsfrom the AICTE, UGC and DST of worth around ₹65 Lakhs as principal investigator (PI).His research interest includes face recognition and detection, video analytics, medical imageprocessing, computational intelligence and pattern recognition.

Major Points Discussed:

- Medical image segmentation demands a segmentation algorithm which works against noise. The most popular algorithm used in image segmentation is Fuzzy C-Means clustering. It uses only intensity values for clustering which makes it highly sensitive to noise.

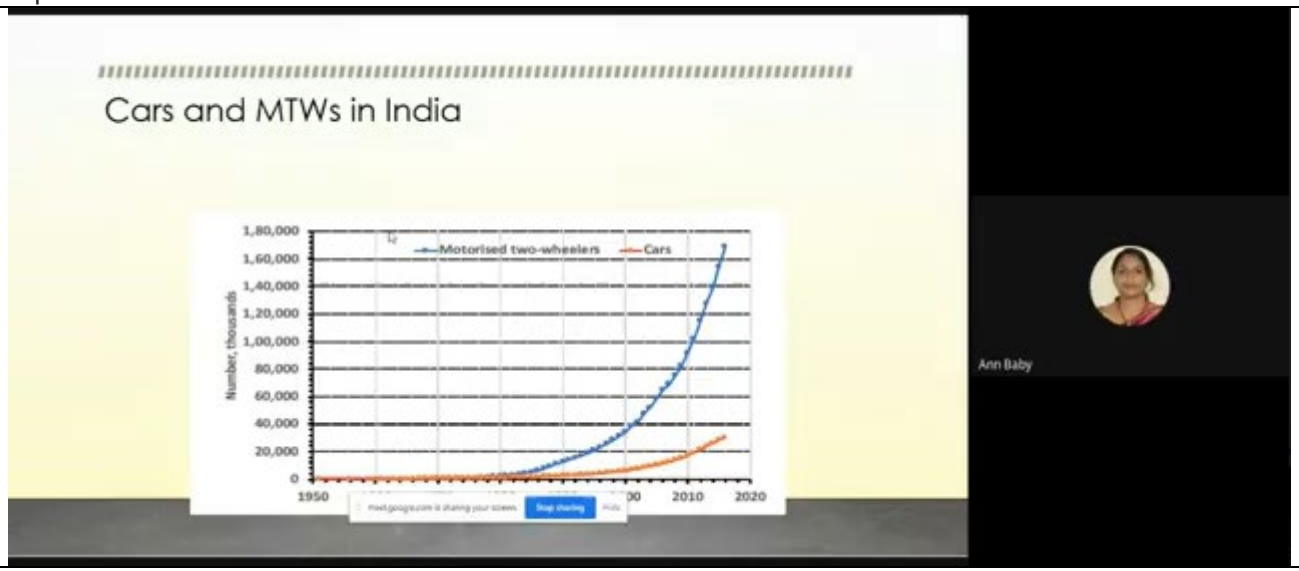
- The comparison of the three fundamental image segmentation methods based on fuzzy logic namely Fuzzy C-Means (FCM), Intuitionistic Fuzzy C-Means (IFCM), and Type-II Fuzzy C-Means (T2FCM) is presented
- These algorithms are executed in two scenarios– both in the absence and in the presence of noise and on two kinds of images– Bacteria and CT scan brain image.
- In the bacteria image, clustering differentiates the bacteria from the background and in the brain CT scan image, clustering is used to identify the abnormality region.
- Performance is analyzed on the basis cluster validity functions, execution time and convergence rate. Misclassification error is also calculated for brain image analysis.



Topic 242 :	Data Science in Road Traffic Accident Management

Dr. Ann Baby ,Assistant Professor ,Rajagiri College of Social Sciences, Kalamassery ,Cochin

A PhD holder in Computer Science from Bharathiar University, she is a University rank holder in her post-graduation and also holds an M.Phil degree. With more than 17 years of teaching experience in the Postgraduate level, she has to her credit several research papers, published in reputed National and International journals. Her latest journal article has been published in the Q1 journal, Computers in Human Behaviour. Mrs. Ann Baby was the conference coordinator of several funded workshops and seminars. She has also successfully completed a UGC funded Minor Research Project. She has conducted training programmes for international corporates like NEC Communications, Japan and the Dubai Port World. She is a lifetime member of CSI (Computer Society of India). She is the resource person for several expert sessions on Cyber Security, Data Analytics, Machine Learning, Digital Libraries,

Swachtha and Environment Friendliness.
Major Points Discussed: • A state of art of machine learning techniques for road accident analysis and forecast is presented. • The data sources used by the resource person are classified according to its origin and characteristics. • The best results are obtained when two or more machine learning techniques are combined. • For the analysis of the information, the different algorithms employed to make predictions about road accidents are listed and compared, as well as their applicability depending on the types of data being analyzed, along with the results obtained and their ease of interpretation and analysis. • The best results reported by the authors are obtained when two or more analytic techniques are combined, in such a way that analysis of the obtained results is strengthened. Among the future challenges in road traffic forecasting lies the enhancement of the scope of the proposed models and predictions by the incorporation of heterogeneous data sources, that include geo spatial data, information from traffic volume, traffic statistics, video, sound, text and sentiment from social media, that many authors concur that can improve the precision and accuracy of the analysis and predictions.


Topic 243 :	codesmells Detection Using Machine Learning

Dr Manjari Gupta , Associate Professor ,Department of Computer Science,
DST-CIMS, Institute of Science, Banaras Hindu University

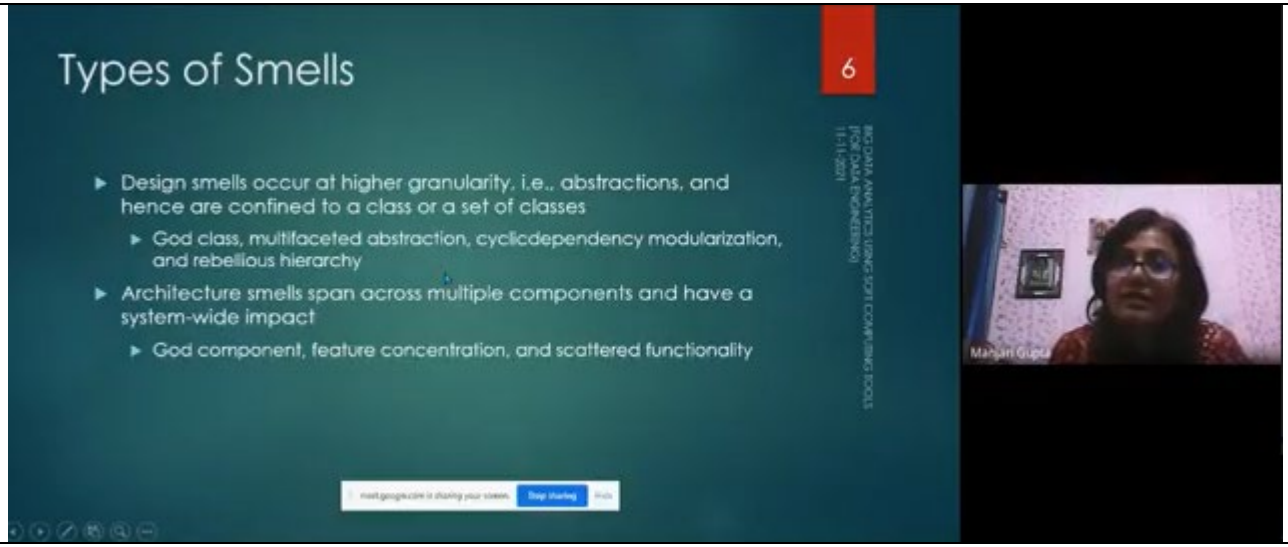
Dr Manjari Gupta received Bachelors degree in Statistics & Physics from the University of Allahabad in 1999 and thereafter Masters degree in Computer Science (with Second Rank) from the University of Allahabad 2002. he earned his Ph.D Degree in Computer Engineering from Institute of Technology, Banaras Hindu University in the year 2006.

Dr. Gupta joined Indian Institute of Information Technology at Allahabad as Lecturer in Computer Science and served there till October 2007. Thereafter she joined Banaras Hindu University as Lecturer in Computer Science and presently serving as Associate Professor ,Department of Computer Science) DST-CIMS, Institute of Science, BHU.

she has published more than 45 research papers in SCI/SCOPUS and other reputed refereed International Journals and more than 65 papers in international conferences and completed a few R&D projects from the AICTE, UGC and DST . Her research interest includes Theory of Computation ,Compiler Design ,Operations Research and Database Management Systems

Major Points Discussed:

- Code smells indicate suboptimal design or implementation choices in the source code that often lead it to be more change- and fault-prone.
- Researchers defined dozens of code smell detectors, which exploit different sources of information to support developers when diagnosing design flaws.
- Despite their good accuracy, previous work pointed out three important limitations that might preclude the use of code smell detectors in practice
- She presented a Review on Machine Learning Techniques for Code Smell Detection
- Based on our findings, we argue that there is still room for the improvement of machine learning techniques in the context of code smell detection. The open issues emerged in this study can represent the input for researchers interested in developing more powerful techniques.



Day 5: 12-11-2021(Friday)

Topic 251 :	Fundamental of Machine Learning and Deep Learning Algorithms

Prof P K Mishra, Professor& Department of Computer Science, Institute of Science
Banaras Hindu University

Dr Mishra is Professor in Computer Science department at Banaras Hindu University, Varanasi. He has more than 20 years of experience in teaching and research.
His primary research interests are in Information Systems and Text Analytics. He has published about 105 research papers (including more than 40 in top SCIE indexed journals). He has supervised over 10 Doctoral thesis and more than 50 Master's thesis. He has obtained research grants from several national and international funding agencies and have worked on 08 extramural research projects. He is Editor of several Scopus indexed Journal. He has held several administrative responsibilities, including the Head of the department, Director of Computer Centre, Nodal Officer of UGC SWAYAM and Member of MHRD National Committee on E-Governance. He has also been member of Drafting Committee of new Science, Technology and Innovation Policy 2020 (STIP) of India. He is member of academic bodies of different Universities and an expert member in several research bodies.

Major Points Discussed:

- Machine learning is the general term for when computers learn from data. It describes the intersect of computer science and statistics where

algorithms are used to perform a specific task without being explicitly programmed; instead, they recognize patterns in the data and make predictions once new data arrives.

- In general, the learning process of these algorithms can either be supervised or unsupervised, depending on the data being used to feed the algorithms.
- Machine learning is at the intersection of computer science and statistics through which computers receive the ability to learn without being explicitly programmed.
- There are two broad categories of machine learning problems: supervised and unsupervised learning.
- A machine learning algorithm can be something as simple as an OLS regression.

Topic 252 :	Application of Data science towards Earthquake Risk Assessment

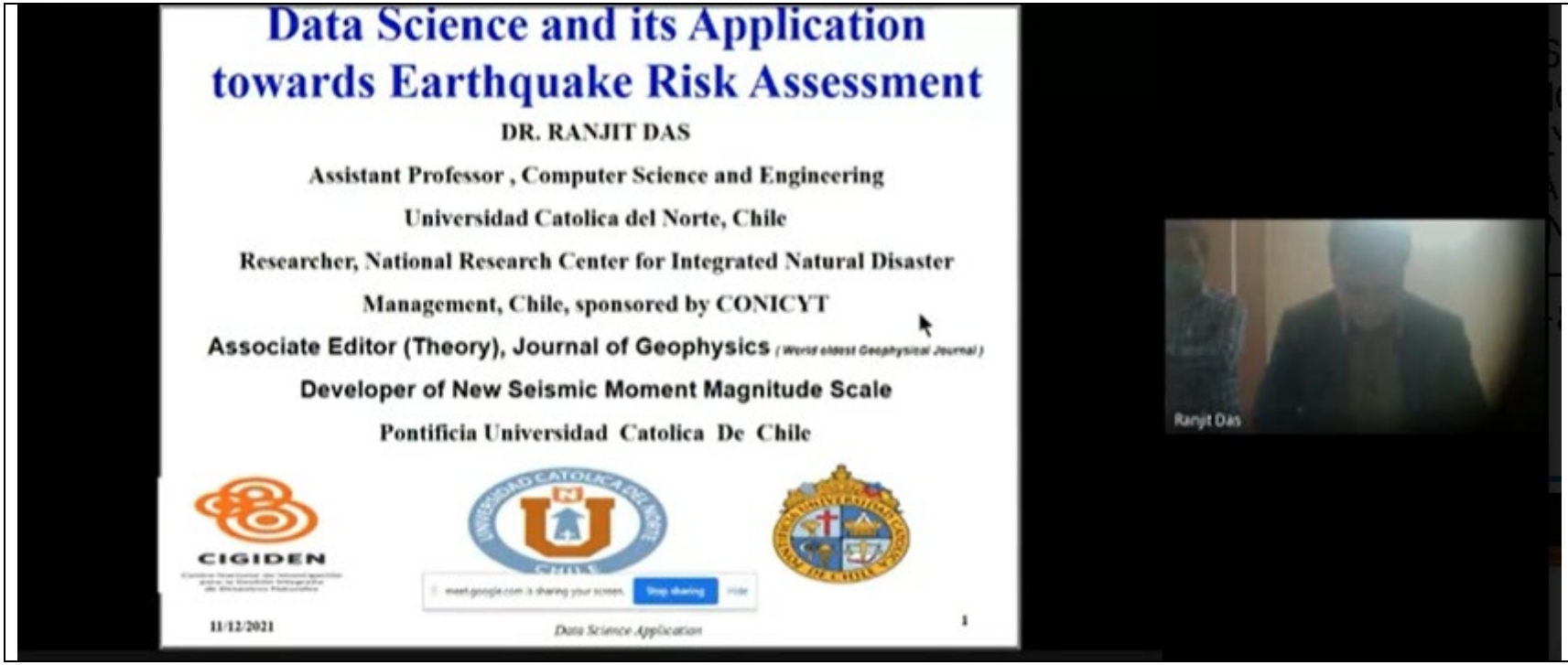
Dr. Ranjit Das, Assistant Professor Department of Computing & Systems Engineering
Universidad Catolica del Norte**, Chile**

An internationally recognized researcher and industry expert in the areas of Earthquake Engineering. Developer of new earthquake magnitude scale.

Dr. Ranjit Das is an Associate Editor of World oldest Geophysical Journal- Journal of Geophysics.
Dr. Das, Assistant Professor of Computer Science and Engineering at Universidad Catolica del Norte, Chile. He is also a Researcher of National Research Center for Integrated Natural Disaster Management, Chile. He received Ph.D. degree fin the field of probabilistic Seismic Hazard Assessment rom Indian Institute of Technology Roorkee. He has expertise in the areas of Data Science and its application towards Earthquake Hazard and Risk Assessment. Dr. Das completed Master of Computer Application and Master of Technology in Computational Seismology prior to his Ph.D.
He was among the 50 having received the National Doctoral Fellowship (NDF) awarded by the All India Council for Technical Education (AICTE) in 2009. Being a life member of the Indian Society of Earthquake Technology, Dr Das has made 23-peer reviewed high impact factor scientific publications. He also made several basic algorithms useful for science and engineering.

Major Points Discussed:

- Introduces combined deep learning and geospatial techniques for earthquake risk assessment.
- Implemented in NE India and evaluated the hazard, vulnerability and risk.
- Accuracy a = obtained was of 0.94, precision of 0.98, recall of 0.85, and F1 score of 0.91.
- 21,412.94, 480.98 and 34,586.10 km2 areas resulted as very high hazard, vulnerability and risk.
- Suitability, applicability and limitations of the combined approach were outlines.
- Earthquake prediction is currently the most crucial task required for the probability, hazard, risk mapping, and mitigation purposes.
- Earthquake prediction attracts the researchers' attention from both academia and industries.
- Traditionally, the risk assessment approaches have used various traditional and machine learning models.
- However, deep learning techniques have been rarely tested for earthquake probability mapping.
- Therefore, this study develops a convolutional neural network (CNN) model for earthquake probability assessment in NE India.



Topic 253 :	Making Machine understand word and sub word boundaries

Dr. Ashish Anand, Associate Professor, Department of Computer Science & Engineering Indian Institute of Technology, Guwahati

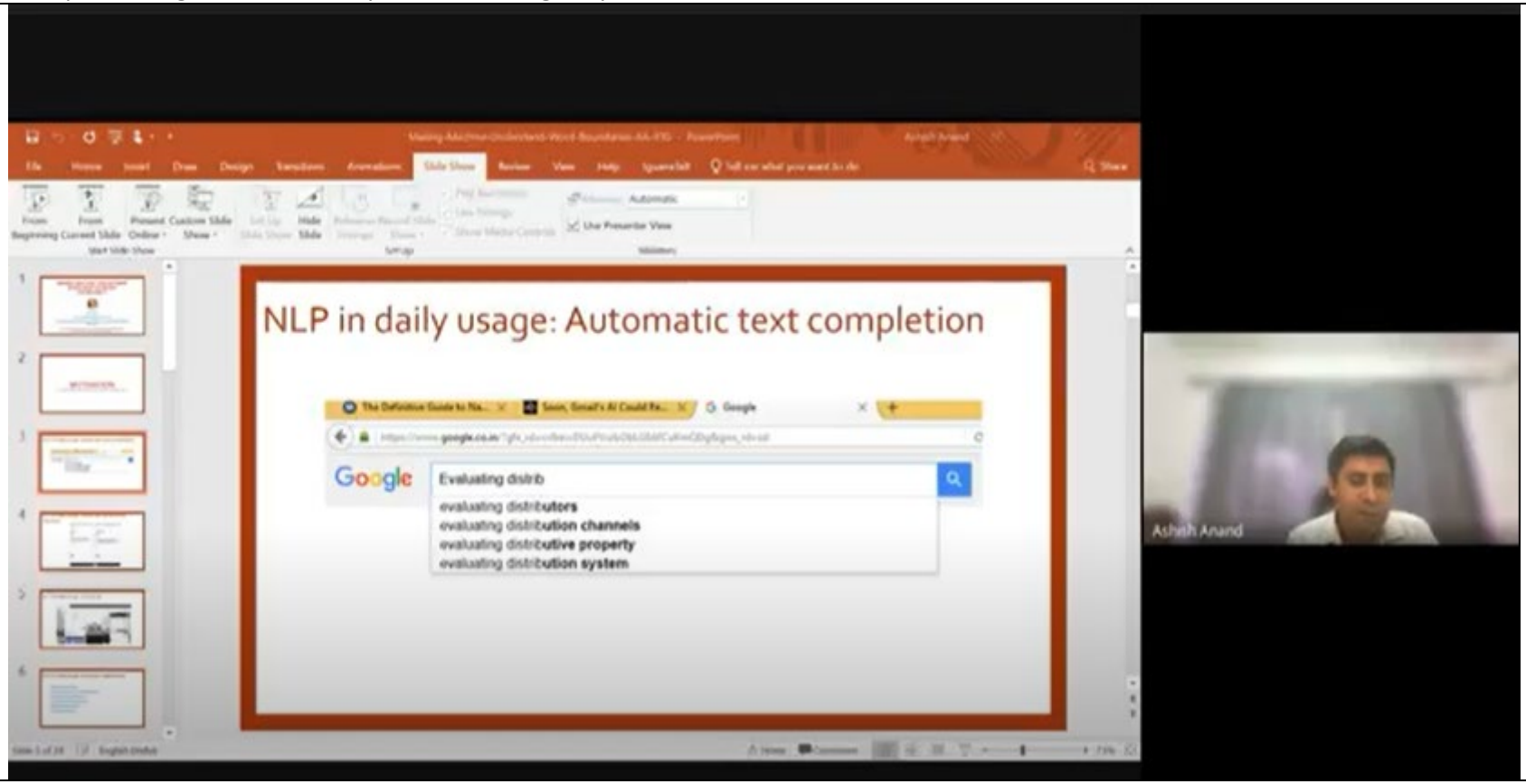
Ashish has joined the Dept of CSE, Indian Institute of Technology Guwahati in Feb, 2011.

- PhD (School of Electrical and Electronics Engineering), Nanyang Technological University, Singapore (2006-2009)
- He did his Masters (Int-MSc, 5 years) in Mathematics and Scientific Computing from Indian Institute of Technology Kanpur.
- Postdoctoral Research Fellow (Sep, 2009 - Dec, 2010), Systems Biology Lab, Institute Pasteur, Paris, France

His primary research interests are in Natural Language Processing (NLP), Biomedical Text Mining, Computational Biology & Deep Learning. He has published many research papers (including more than 40 in top SCIE indexed journals).. He has obtained research grants from several national and international funding agencies and have worked on many research projects. He is a Reviewer of many reputed journals including ACM Transactions on Asian and Low-Resource Language Information Processing

Major Points Discussed:

- Tokenization is a key (and mandatory) aspect of working with text data
- discussed the various nuances of tokenization, including how to handle Out-of-Vocabulary words (OOV)
- A Quick Rundown of Tokenization
- The True Reasons behind Tokenization
- Which Tokenization (Word, Character, or Subword) Should we Use?
- Implementing Tokenization– Byte Pair Encoding in Python



Day 6: 13-11-2021 (Saturday)

Topic 261 :	Artificial Intelligence based big data analytics using IoT in Cloud Environment

Dr. Mansaf Alam, Associate Professor, Department of Computer Science, Jamia Millia Islamia, New Delhi-110025

Dr. Mansaf Alam is presently working as an Associate Professor, Department of Computer Science Jamia Millia Islamia, New Delhi. He is mainly interested in exploring the software architectural issues related to the quality of complex software systems across various domains such as data intensive processing, edge-fog computing, AI, and IoT-based systems. He has a couple of patents and high-quality publications in his name. He has published more than 80 research papers – which includes 03 book – in various reputed journals/conferences. He is an active review member of a few SCI indexed journals, and core ranked conferences.

Major Points Discussed:

- Cloud computing, internet of things (IoT), artificial intelligence, and big data are four very different technologies that are already discussed separately.
- The use of the four technologies is required to be more and more necessary in the present day in order to make them important components in today's world technology.
- He centers their attention on the integration of cloud, IoT, big data, and artificial intelligence.
- Several kinds of research techniques have surveyed artificial intelligence, cloud, IoT, and big data separately and, more precisely, their main properties, characteristics, underlying technologies, and open issues.
- However, to the greatest of the knowledge, these works require a detailed analysis of the new paradigm that combines the four technologies, which suggests completely new challenges and research issues. To bridge this gap, this he presented a survey on the integration of cloud, IoT, artificial intelligence, and big data.

Topic 262 :	NEP 2020: Major Reforms

Dr. Nisanth P.M , Assistant Professor ,Department of Education ,Rajiv Gandhi University (A central university) ,Rono-Hills, Doimukh-791112, Arunachal pradesh

Dr. Nisanth P.M is an Assistant Professor ,Department of Education ,Rajiv Gandhi University (A central university) ,Rono-Hills, Doimukh-791112, Arunachal pradesh , His Area of Interest include Educational Psychology, Guidance And Counselling, School Administration And Management, Critical Pedagogy, Research Methods In Education etc . His Specializations are in Educational Psychology, Guidance And Counselling, School Administration And Management

The National Education Policy 2020 (NEP 2020), which was approved by the Union Cabinet of India on 29 July 2020, outlines the vision of India's new education system. The new policy replaces the previous National Policy on Education, 1986. The policy is a comprehensive framework for elementary education to higher education as well as vocational training in both rural and urban India. The policy aims to transform India's education system by 2040.

Major Points Discussed:

- The National Education Policy 2020 (NEP 2020), launched on 29 July 2020, outlines the vision of India's new education system. NEP 2020 focuses on five pillars: Affordability, Accessibility, Quality, Equity, and Accountability – to ensure continual learning. It has been crafted consistent with the needs of the citizens as a demand for knowledge in society and economy called for a need to acquire new skills on a regular basis. Thus, providing quality education and creating lifelong learning opportunities for all, leading to full and productive employment and decent work as enlisted in United Nations Sustainable Development Goals 2030, forms the thrust of NEP 2020. The new policy replaces the previous National Policy on Education, 1986 and forms a comprehensive framework to transform both elementary and higher education in India by 2040.
- The NEP 2020 calls for key reforms in both school and higher education that prepare the next generation to thrive and compete in the new digital age. Thus, there is much emphasis upon multidisciplinary, digital literacy, written communication, problem-solving, logical reasoning, and vocational exposure in the document.

Session details with email & Phone number

Days	10:00 AM -11:30 AM	11:30 AM -1:00 PM	1:00 PM - 2:00 PM	2:00 PM -3:30 PM
Day 1: 08-11-2021 (Monday)	Topic : Application Of Big Data Analytics , From Smart Grid To Financial Technology Dr. Santosh Biswas Associate Professor, Department of Computer Science & Engineering Indian Institute of Technology Guwahati Email : santosh_biswas@iitg.ernet.in,	Topic : { Introduction to big data : Perspectives and algorithms } Mr. Aswini Kumar Patra, Dept of CSE Assistant Professor , NERIST, Arunachal Pradesh Email : aswinipatra@gmail.com Phone: +91 97740 13655	Lunch Break	Topic : { Real world signals , Big data and deep learning structures} Prof. Kandarpa Kumar Sarma Professor, Department of Electronics and Communication Engineering Gauhati University Email : kandarpaks@gauhati.ac.in Phone: 9401454994

	santoshbiswas402@gmail.com Phone : 99575 61026			
Day 2: 09-11-2021 (Tuesday)	Topic: Introduction to Hash Tables Dr. Ashwin Ganesan, AssociateProfessor, International School of Engineering (INSOFE) Mumbai Email : ashwin.ganesan@gmail.com Phone: +91-98694 55961, +91-96368 20995	Topic : HARD & Soft Support Vactor Machines with Kernel Methods and Their Applications Dr. Vibhor Kant, Assistant Professor, RGSC, BHU Email : vibhor.kant@bhu.ac.in Phone: +91 98999 34190		Topic : { Green Computing Software as-a-Service} Dr. Sumit Kalra ,Assistant Professor ,Dept. of Computer Science and Engineering IIT Jodhpur RAJ 342037 Email : sumitk@iitj.ac.in Phone: 7976777787
Day 3: 10-11-2021(Wednesday)	Topic : { Fundamentals of machine learning and Deep Learning algorithms } Dr. Rakhi Garg. Associate Professor,. Computer Science, Mahila MahavIdyalaya, Banaras Hindu University, Varanasi Email : rgarg@bhu.ac.in Phone: +91 83188 23846	Topic : Supervised learning : Decision trees and Adaboost Dr.P.Thiyagarajan,Assistant Professor, Department of Computer Science, Central University of Tamil Nadu Email : thiyagu@cutn.ac.in Phone: +91 98412 34510		Topic : Supervised learning : Decision trees and Adaboost Dr.P.Thiyagarajan,Assistant Professor, Department of Computer Science, Central University of Tamil Nadu Email : thiyagu@cutn.ac.in Phone: +91 98412 34510
Days	**10:00 AM -11:30 AM**	**11:30 AM -1:00 PM**		**2:00 PM -3:30 PM**
Day 4: 11-11-2021(Thursday)	**Topic**: Advances in Fuzzy Clustering Algorithms for Medical Image Segmentation	Topic : Data Science in Road Traffic Accident Management Dr. Ann Baby ,Assistant Professor ,Rajagiri College of Social		Topic : codesmells Detection Using Machine Learning

	Prof. Jamuna Kanta Sing,CSE Dept., Jadavpur University Kolkata 700032 Email : jk_koustav@yahoo.com jksing.cse@jadavpuruniversity.in Phone: 9874196889	SciencesKalamassery Cochin Email : ann@rajagiri.edu Phone: 09895012317		Dr Manjari Gupta , Associate Professor ,Department of Computer Science, DST-CIMS, Institute of Science, Banaras Hindu University Email : manjari@bhu.ac.in, manjari_gupta@rediffmail.com Phone: +91 94504 19974
Day 5: 12-11-2021 (Friday)	Topic : Fundamental of Machine Learning and Deep Learning Algorithms Prof P K Mishra, Professor&,Department of Computer Science, Institute of Science Banaras Hindu University Email : mishra@bhu.ac.in Phone: +91 94512 27115	Topic : { Application of Data science towards Earthquake Risk Assessment} Dr. Ranjit Das, Assistant Professor Department of Computing & Systems Engineering Universidad Catolica del Norte, Chile Email : ranjit.das@ucn.cl Phone: +91 97079 59606		Topic : { Making Machine understand word and sub word boundaries} Dr. Ashish Anand ,Associate Prof , IIT Guwahati Email : anand.ashish@iitg.ac.in Phone: 96780 85621

3.1. Examination:

An examination was conducted via online (https://docs.google.com/forms/d/e/1FAIpQLSd3QLFDiQKPHvuktdHK89bVYDAR7wjJISAwh05bxfm2cWR4Qw/closedform) among the participants. It was a multiple choice question based examination. It consisted of twenty questions and each question consisted of four options. Duration of the exam was 1 hour.

4. Major Takeaways

4.1. Academic Context

It was increasingly feasible to create and sustain virtual networks using resources such as videoconferencing and web 2.0 communications, which allowed substantial value in bringing people together to be immersed in a common experience. Personal interactions also allow for informal communication outside the defined schedule that can be valuable to the network-building process. Experience from the program From 08 November 2021 to 13 November 2021 suggests that one week long STTP would be optimal, given the amount of new material that participants would be expected to absorb and the value of cumulative learning-by-doing.

A key element for ensuring success and enhancing sustainability in this STTP is the participation of teams from institutions, including a range of junior to senior members on each team. The adopted STTP model has shown added success and commitment by participants if their home institute provides at least modest resources to help implement what participants learns.

4.2. Research Context

As the design of the planning committee meeting of Dept of CSE, RGU suggested, the STTP built around extensive, direct participation. Participants have the opportunity to be both “students” and “teachers,” to practice the methods they are learning, and to develop “teachable tidbits” and other materials to help them implement their research or modules at their innovation practices.

An important feature of this STTP’s hands-on approach is the commitment to assist participants in implementing what they have learned. In addition to implementing new ideas or courses, they acquired experience and resources to plan and carry out effective assessments of whether the learning goals of their new activities are being met. Through this STTP participant academics from various universities may discussed didactical approach of research in data science and get its benefits for their research.

4.3. Policy Making And Practice Context

At this STTP, we will deliberate on some of the critical aspects of modern trends of advanced research tools in higher education. This STTP introduced the data science research product

family and provides a high-level overview of the major capabilities. This program also highlighted some examples that demonstrated modeling for big data science, modeling paradigms with a special reference to Machine learning and Deep learning.

The resource person through video tutorials explained how we can use deep learning modules and other techniques for data exploration, data cleaning, and data processing to invert the classroom and create a more active learning environment. It is also covered some best practices on incorporating technical computing, modeling, and simulation with Python in research based academic curricula.

4.4. Summary

The 6 Days Short Term Training Program (ONLINE) series on big data analytics using soft computing tools (STTP – PHASE II: **08 November 2021 to 13 November 2021**) organized by Department of CSE, Rajiv Gandhi University in association with Department of Electronics and Communications, RGU and Department of Mathematics, RGU was concluded today. Total 162 participants from various parts of the country attended the program connecting through online mode from their place.

Resource persons were from different higher educational institutions and industries and they delivered their expertise to the participant. Every session had an interactive part among students and resource person. Resource person's presentations and reports were of high standard and delivered what they were intended for.

Prof. Saket Kushwaha, Hon'ble Vice-Chancellor congratulated the participants who completed the program and told that learning is a continuous process that promote teachers' teaching skills, master new knowledge, develop new proficiency, which in turn, help improve students' learning . He expressed that, the outbreak of COVID-19 pandemic in India has caused extreme distress to the society and is a setback to academic activity. In this moment of crisis, RGU has endeavored to leverage digital access for continuation of the academic activities by online mechanisms, he said. He appreciated the Department of CSE for organizing the program in an appropriate time. Prof. A. Mitra, Pro-Vice Chancellor stressed the importance of online platforms for learning during this pandemic.

All the participants expressed that they had wonderful learning experience during the STTP and conveyed their gratitude to the STTP secretary Prof. Utpal Bhattacherjee and coordinator Dr. Firos A. They said that these 6 days experience would take them a long way in their academic prospects.

The STTP organized by RGU was meant for faculty and researchers. The STTP is specially designed to meet the modern education requirements of teachers, researchers, and trainers in HRD, training colleges and industrial organizations. The 6 days program from 08 November 2021 to 13 November 2021, which was the first phase of the series, not only covered basic idea about

the big data analytics, which can play great role in almost all research areas but also focused on qualitative and quantitative research methods and innovative pedagogical techniques.

Participants were given the learning resources that will support their classroom instruction as well as in their research in future. The added advantage for this offering was the scope to learn through diversity in the participant's background. They were from different fields of Engineering, Science, Management, etc. and came with a rich array of experience. The participants from all over the country worked together in groups, staying at home and connecting through online platform.

Annexure 1 (List of participants):

Annexure 2 (Examination Questions):

Annexure 3 (Examination Marks Details):

Annexure 4 Sample Participation certificates:

Annexure 5 (Feedback of Participants):

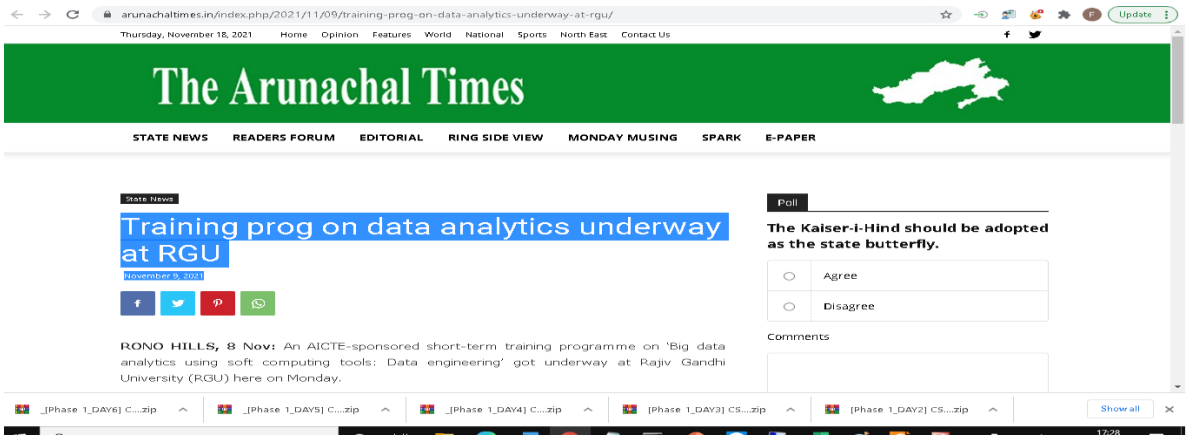
Annexure 6 (Video URLs of Training Programs):

Video recording s of Phase 2 is available at the following playlist link

https://www.youtube.com/playlist?list=PLWrGpNQV0Iy5x992Fx200clzwSFvmZups

Annexure 7 (Press release): Press Release Times of Arunachal

1. URL info at University portal : https://rgu.ac.in/wp-content/uploads/2021/09/sttp_cse.pdf
2. Report on Arunachal Times Online Edition : Training prog on data analytics underway at RGU , Dated November 9, 2021, URL : https://arunachaltimes.in/index.php/2021/11/09/training-prog-on-data-analytics-underway-at-rgu/



3. Report on Arunachal Times Press Edition : Dated November 9, 2021

Training on data engineering commences at RGU

RONO HILLS, Nov 08: The AICTE Sponsored Short Term Training Programme(STTP) Phase-II on "BIG DATA ANALYTICS USING SOFT COMPUTING TOOLS : DATA ENGINEERING" Jointly organized by Department of Computer Science and Engineering, Department of Electronics and Communication Engineering, and Department of Mathematics, Rajiv Gandhi University commences from today.

The first technical session was delivered by Dr. Santosh Biswas, Associate Professor, Dept of Computer Science, IIT Guwahati on "Application of Big Data Analytics, From Smart Grid to Financial Technology" and was followed by the Hands on training by Aswini Kumar Patra, Assistant Professor, Dept of Computer Science Engineering, NERIST, Nirjuli.

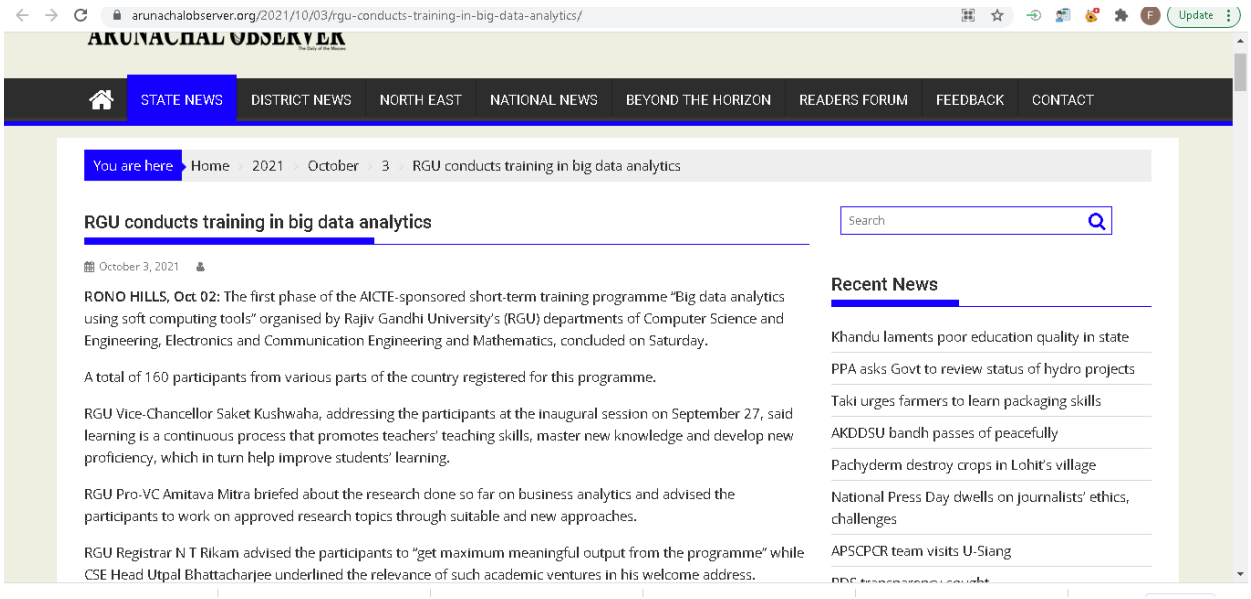
While the last technical session of the first day of STTP was delivered by Prof. Kandarpa Kumar Sarma, Professor, Dept. of ECE, Guahati University on " Real world signals, big data and deep learning structures' '.

Earlier during the inaugural session of the program, Chairman of the programme and Head of the Department of CSE, Prof. Utpal Bhattacharjee delivered the welcome address on the relevance of such academic ventures and encouraged the participants to take complete advantage of such a programme. The coordinator of the programme, Dr. Firos A gave a brief introduction of the programme and discussed the qualifying criteria of getting the certificate .The Convenor of the programme Champa Tanga, Assistant Professor of Dept of ECE highlighted the theme of the programme and said that this training series is meant for faculty and researchers.

The training programme is designed to meet the modern education requirements of teachers, researchers, and trainers in HRD, training colleges and industrial organizations. The inaugural programme concluded with the vote of thanks from the convenor Dr. Saifur Rahman, Assistant Professor, Dept of Mathematics, RGU.

The training series is designed in 3 phases (STTP-Phase I: 27 Sep 2021 to 02 Oct 2021, STTP- Phase II: 08 Nov 2021 to 13 Nov 2021 and STTP- Phase III: 29 Nov 2021 to 05 Dec 2021) at Rajiv Gandhi University.

4. Report on Arunachal Observer : RGU conducts training in big data analytics, Dated November 9, 2021, URL : https://arunachalobserver.org/2021/10/03/rgu-conducts-training-in-big-data-analytics/



Annexure 8 AQIS APPLICATION for STTP details

Annexure 9 Brochure

Annexure 10: List of Participates Successfully Completed the course

1	MRS	KAMURU SAMEENA	SRI VENKATESHWARA INSTITUTE OF TECHNOLOGY
2		DR.PANKAJ KAKATI	JAGANNATH BAROOAH COLLEGE (AUTONOMOUS), JORHAT, ASSAM-785001
3	MS	BHARTI MISHRA	RAJIV GANDHI UNIVERSITY
4		DR. GANTI NAGA SATISH	BVRIT HYDERABAD COLLEGE OF ENGINEERING FOR WOMEN, HYDERABAD
5	DR.	MURALIDHAR KURNI	GITAM (DEEMED TO BE UNIVERSITY), HYDERABAD
6	MS	AAKANKSHA JAIN	R. K PATNI GIRLS COLLEGE KISHANGARH
7	DR.	KIRAN SREE POKKULURI	SHRI VISHNU ENGINEERING COLLEGE FOR WOMEN(A)
8	MR	RAJU DOLEY	RAJIV GANDHI UNIVERSITY, ARUNACHAL PRADESH
9	MR	SWMDWN GOYARY	RAJIV GANDHI UNIVERSITY
10	MR	BIKRAM THAPA	RAJIV GANDHI UNIVERSITY
11	MR	GITARTHA PAL	XPRO INDIA LIMITED
12	MS	NABONITA RAKSHIT	RABINDRA BHARATI UNIVERSITY
13	MR	S.SANTHAKUMAR	ANNAMALAI UNIVERSITY
14	MR	MILIND ANNASAHEB PATIL	DR. GHALI COLLEGE, GADHINGLAJ, KOLHAPUR, MAHARASHTRA
15	MS	G KOKILA	ANNAMALAI UNIVERSITY
16	DR.	ARIJIT GHOSH	ST. XAVIER'S COLLEGE (AUTONOMOUS), KOLKATA
17	PROF.	SUCHITRA KUMARI	ST. XAVIER'S COLLEGE (AUTONOMOUS), KOLKATA
18	MS	PRIYANKA YADAV	RAJIV GANDHI UNIVERSITY
19	MR	TAGE BAMBI	RAJIV GANDHI UNIVERSITY

20	MS	SHILPI SIKHA DAS	BIRJHORA MAHAVIDYALAYA
21	MR	ZAHID AHMED	NORTH EASTERN HILL UNIVERSITY
22	DR.	B.JAYANTHI	KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS)
23	MR	LAPSANG LAMA	RAJIV GANDHI UNIVERSITY
24	MR	Y R JANARDHAN REDDY	G PULLA REDDY ENGINEERING COLLEGE(A) :KURNOOL
25	MR	KAFUI TSOEKE AGBEVANU	HO TECHNICAL UNIVERSITY
26	MS	PINKI DOLOI	NORTH EASTERN REGIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY
27	DR.	KUPPALA SARITHA	S.V. DEGREE & P.G. COLLEGE, ANANTAPUR
28	PROF.	KULKARNI CHANDRAPRABHA VIDYADHAR	RAJARSHI SHAHU MAHAVIDYALAYA (AUTONOMOUS),LATUR
29	PROF.	JAYSHREE M.JADHAV	RAJARSHI SHAHU MAHAVIDYALAYA AUTONOMOUS,LATUR
30	MS	ARSHI JAMAL	GOVERNMENT FIRST GRADE COLLEGE, RAICHUR
31	MS	S KRITHIKA	KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS)
32	MS	MOHINI SINGH	NIPER SAS NAGAR
33	PROF.	RACHAMALLU S MURALI NATH	BVRIT HYDERABAD COLLEGE OF ENGINEERING FOR WOMEN
34	PROF.	DR.CHANDRAKANTH G PUJARI	DR.AMBEDKAR INSTITUTE OF TECHNOLOGY BANGALORE
35	DR.	MD FARID SHAH	NORTH EASTERN REGIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY
36	MR	AJIT DAS	BODOLAND UNIVERSITY
37	DR.	ANAND KUMAR	J. R. DIVYANGA UNIVERSITY, CHITRAKOOT
38	MR	SOURAV KUMAR PUROHIT	SAMBALPUR UNIVERSITY INSTITUTE OF INFORMATION TECHNOLOGY
39		DR.SOUMEN KANRAR	AMITY UNIVERSITY JHARKHAND
40	DR.	M.RAMESH	SAVEETHA SHOOL OF ENGINEERING
41	DR.	NIPEN SAIKIA	RAJIV GANDHI UNIVERSITY
42	MRS	DAKJUM ESHI	RAJIV GANDHI UNIVERSITY
43	MRS	SEEMA KHANUM	ICERT , MEITY, DELHI
44	DR.	ABUBAKKAR K.K	RESEARCH DEPTT.OF ENGLISH , GOCT.VICTORIA COLLEGE , PALAKKAD , PIN 678 001

More details about this program are kept in google drive, which may be accessed through https://drive.google.com/drive/folders/1xFjDH6felXQr1e2KPR4Ohrq3tHE1GHZG?usp=sharing